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A DOWN TO EARTH SUPPLEMENT FOR THE YOUNG AND CURIOUS

A Bowl of Seaweeds

A deep dive into the enchanting world under the sea to discover the wow and wonder, and value of ***seaweeds***.



Cover Story

The Wonder Weeds in the Sea

A fascinating account by a passionate marine environmentalist explaining why seaweeds are environmentally the most sustainable foods on our planet.



Gabriella D'Cruz

Hi! Do you guys know what a seaweed is? It's like the spinach of the sea. You might have eaten it in a roll of sushi or a bowl of green salad or a soup. But most likely, you wouldn't have tasted it at all. That's because in India, we don't have a popular tradition of seaweeds. But that's about to change—I believe as the founder of a seaweed food company called *The Good Ocean*.

My company hand-harvests local seaweed from different parts of Goa's coastline and, cleans and dries it before selling it to chefs and restaurants. I also consult food and beauty companies that wish to include seaweed in their product range. I, myself, dive in the tidepools to gather seaweeds during low tide days. I wear my fins and mask, and swim around to find the weeds I need. Then I cut them at a certain height, using a pair of scissors, and ensure to not pull the entire weed out from the rock. By doing this, I allow the rest of the plant to grow naturally and take only what I need. When I'm done, I put the leaves in a net bag and swim back to the shore. If the tide is very low, unlike on a full moon or a new moon day, I pluck the weeds directly by walking up to the rocks where they are spreading.

Prior to running this start-up, I spent many years studying the health and environmental benefits of seaweed and how they are among the most sustainable foods on earth. Seaweeds or marine algae are damn nutritious with fiber, proteins, and vitamins—like A, B1, B12—plus other good things—like, omega 3 fatty acids, niacin, folic acid, and iodine. These minerals help our brain and nervous system, and also keep us fit and fine.

Environmentally speaking, seaweeds have one of the lowest carbon footprints on our planet! *(Find out what's 'carbon footprint' in case you're wondering.)*



That's because unlike land plants which require artificial fertilizers, all seaweeds really need to survive is sunlight and seawater. That's enough for them to grow thrice as fast as any other terrestrial plant. Their quick growth has formed dense marine forests in oceans across the world, including both cold and warm waters. These forests play a very vital role in absorbing carbon dioxide, sequestering greenhouse gases (GHG), and de-acidifying oceans. High seaweed density along coastlines, provide a substantial buffer against storms and cyclones.

That's why it's really important for seaweeds to exist in abundance. For many oceanic creatures, they are a base food, and important breeding and feeding ground for their offspring. The Humpback whale, one of the largest creatures in the world, feeds on lots of seaweed apart from fish and krill. Turtles, dolphins, and even our local fish stock get their energy from these sea algae. Thus, seaweeds must be really, really protected and their importance be celebrated.

In fact, seaweeds are quite relished in East Asian cuisines, especially, of China, Japan, and Korea. The Koreans prepare a delicious seaweed soup called *miyeok-guk*, a traditional dish, on their every birthday! Their women who have recently delivered babies are also served seaweed to regain their strength. Normally, the weeds are dried and stored, which lets them last upto 2–3 years, and soaked in water just before they are eaten. The rehydrated weeds are then put into salads, soups, burgers, and chips.

At this point you'd be wondering what Indian seaweeds taste like and where you can have some. In India, we have over 800 species of sea algae, including green seaweeds like ulva (sea lettuce), brown seaweeds like Sargassum, and red seaweeds like Gracilaria. Indian seaweeds have different flavours and textures and, if you live by the sea, you can also gather some between the months of November to March. Coastal Tamil Nadu has multiple harvesting communities, especially of women, who farm and sell seaweeds to the hydrocolloid and bio-fertilizer industries in the region. They use seaweed extracts to make many eatable and daily care items, like ice-creams,



Cover Story

ON THE WALL

Some Popular Seaweeds of India

Deep dive into the jungles undersea and gather some fascinating facts about the wonder world of seaweeds along India's coastline.

Gabriella D'Cruz



Spatoglossum variabile

Found in the deeper reaches of tidepools, this is a seasonal species that grows between October to April. It is known for its distinct raw mango flavour and bright aquamarine colour, which it turns into when exposed to heat and sunlight.

Dictyota dichotoma

This belongs to the family of 'brown seaweeds' and appears like some flattened, branched, fingers of a hand. It is mainly found in the warm months of October to May. It has a high sugar content and is used to make beer, frozen food, fruit juices, jellies, pastries, and salad dressings.



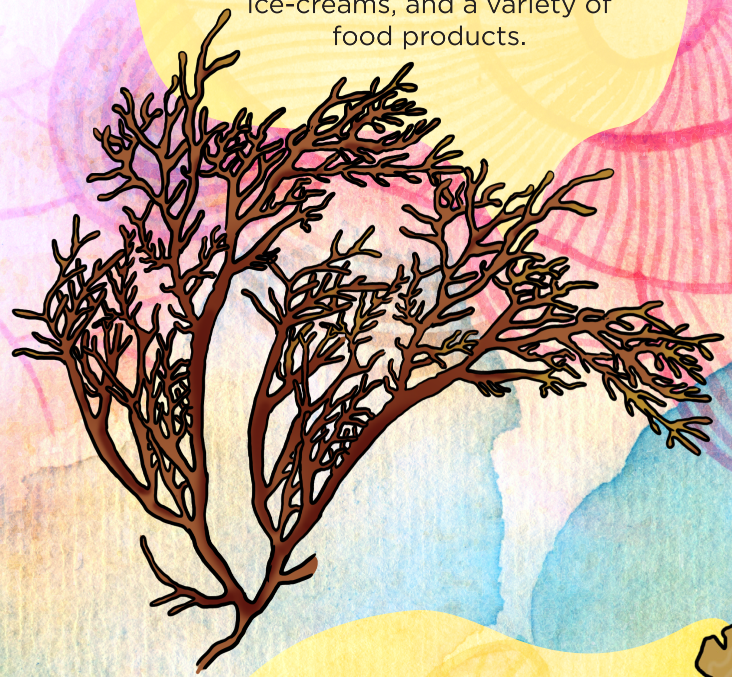


Sargassum swartzii

This is the most abundant seaweed in India. Its individual weeds can grow over 20-feet high, which makes them together appear like a real underwater forest. It is also a brown seaweed and is used to make sodium alginate, which is a gelling agent used in toothpastes. It is also highly nutritious and has a rich umami flavor, hence it's a great seaweed to taste.

Gracilaria corticata

A commonly found 'red seaweed,' it is commercially harvested to produce a gel extract called *agar-agar* (China grass). This gelling agent is used in jams, ice-creams, and a variety of food products.





Acanthophora spicifera

This is a red seaweed with a jelly-like interior, which makes it a very interesting food ingredient. It grows for a very short period on the rocks in the tidepools and gives the rocks a very soft, smooth, carpet-like texture.

Padina tetrastromatica

Again a brown seaweed, this species is commonly called 'sea fan'. Found after the monsoon, between October to March, its bunchy fronds are often home to sea slugs and molluscs.





Caulerpa peltata

This seaweed is commonly called 'sea grapes' because just like grapes, you can pop it in your mouth and enjoy a liquidy centre in taste. This weed is ecologically very important in the tidepool as certain sea slugs and nudibranchs live exclusively in its fronds.

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Myself harvesting Sargassum in Goa (Image credits: Rebecca D'Costa)

Sargassum seaweed harvested from Goa

Photo: Rebecca D'Costa

jams, jellies, toothpastes, and other products that require non-bovine gelatine. In fact, seaweeds have a lot of commercial uses in industries like, food, animal feed, fertilizer, pharmaceutical, bio-plastic, and clothing.

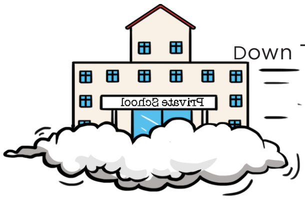
Thus, the production of seaweeds should be promoted. They must be farmed separately so that their natural forests are conserved. Not only that, seaweeds are also 'low carbon foods,' i.e. they do not emit much carbon dioxide or GHGs during their farming. Shrimps, for example, are high carbon foods. That's because they are cultivated in farms that were set-up by cutting down mangrove forests. *(Find out if you don't know yet the importance of mangrooves.)* Shrimps are also fed wild fish, which is carbon-intense. Seaweeds, on the other hand, do not require any land to grow and can reproduce along every coastline, which reduces the cost of transporting them. Thus, seaweeds are clearly low on carbon.

The Indian Government has recognized their value and allocated roughly Rs 600 crore under the Pradhan Mantri Matsya Sampada Yojana to start seaweed farming across the country. This is a very positive development as currently, there are no regulations on its farming in India. It seems that anyone, anywhere can clear seaweeds, overharvest, and endanger them. This has already been done by a few large companies, though they have also generated some coastal income through contractual farming. However, it is the local ecology and wild seaweeds which have been at stake throughout.

Apart from seaweed farming, alternate ways of their production must also be encouraged. Some of the latest methods involve cultivating baby seaweeds in labs and putting their saplings out on rafts or long lines in the ocean. Then, allowing them to grow into full adults until they are harvested later. At the time of harvesting, their plucking should be done very carefully. Training programs should be offered to marine farmers to harvest their crops in the right way, i.e. sustainably.

Now, the next time you hear about seaweeds or find them in your food, try to imagine how our oceans be without them and, therefore, why these wonder weeds should never be weeded out!

The author is a biodiversity conservationist, an under-30 entrepreneur, and founder of The Good Ocean, an upcoming Goa-based start-up.





This School or That School?

An opinion on the public schools vs. private schools debate, arguing what's wrong with the private schools and why the public schools must be promoted.

EDUCATION IS FREEDOM. But at what cost does this freedom come to us? To our society? And to the rich and poor?

In the name of imparting values and morals, commercialization of education has increased social inequality. The gap between the rich and the poor is widening and aggravating more than ever. Illiteracy among the poor is the most overlooked scam pervading across our country for years. In rural India, where about half of our population lives and where public schools are present mostly, the number of educated children remains of utmost concern. Most of these government-run schools lack funding, professional staff, advanced lab equipment, proper hygiene, and even basic toilet facilities. Thus, the public schools offer very low-quality education and this difference triggers just because their student's parents cannot afford the luxury of private schooling.



Harshita Sharma

Private schools, on the other hand, provide better teaching faculty, infrastructure, facilities, etc. Therefore, 'private schools are a better choice for your kid' is considered a plain fact. That's why parents believe that by sending their children to these schools, they are fulfilling their duty of 'securing' their childrens' future. Unfortunately, such a belief system creates a negative pattern in the minds of those who can't make it to private schools. They grow up with an inferiority complex and a feeling of being unworthy or underserving whenever a good opportunity comes their way. And on top of that when they mess up with these opportunities, they continue this vicious cycle with their own kids.

Even when the poor students from public schools get into the private, they land up in a place where others have parents richer than theirs. This leads to unhealthy comparisons, friendships, and group-ism based on the monetary status of their parents. Thus, private schools aren't necessarily good for us. They, anyway, only care for profit! They unconsciously manipulate millions of people in to paying enormous cheques as tuition fee and we tend to turn a blind eye on them.

Instead all that people's money should be invested by the government to build more schools in villages that lack education. Only when the private schools are monitored will our ministers think of bettering the government ones. Only then will they initiate reforms and policies that bridge the gap between the private and public sectors. Politicians will move forward and do what is best for the majority only if they are pressed to do that. Even their children and those of civil servants take great pride in private schooling without thinking of the societal repercussions this leads to.

With every parent wanting to send their kids into private schools, I feel that the 'choice' of having private schools itself should be removed to improve the overall standard of our education. Only then will people willingly send their kids to public schools and parents will take pride in doing so. Since I truly believe that private schools inhibit the reform of the public system, I suggest that private schools be banned. We, the people have the power to bring about changes and we will!

The author is a student of class 12, Neerja Modi School, Jaipur, Rajasthan.

Born Meetha

Taiyaari doctor ki Fees Ki



As per the guidelines released by the Indian Council of Medical Research in June last year, around 95,600 children below 14 years are suffering from type-1 diabetes. Nearly 16,000 new cases are also diagnosed each year in this age-group. Notably, type-2 diabetes is emerging as a new childhood disease due to increase in obesity in our country. However, with small lifestyle changes and a healthy diet, it can be controlled. So, avoid all junk food!